

C L A I M S

(1) Aluminum alloy thermal exchanger being characterized in that it has the first protective layer of chemical conversion coating being produced by using the treatment liquid containing (a) and (b) below on the surface of the aluminum alloy, and it further has the second protective layer of hydro-philic film being produced by adding the treatment liquid containing (c), (d), (e), (f) below and the weight of zirconium in (f) is 40~350 % to the weight of vanadium in (e) on the first protective layer and then drying.

- (a) water soluble vanadium compound
- (b) fluoro zirconium complex compound
- (c) aqueous polyvinyl alcohol polymer having vinyl alcohol unit of more than 40 mol % and additional polymerization unit (other than the vinyl alcohol unit of above) of less than 60 mol %
- (d) polyoxyethylene glycol of 6,000~1,000,000 in average molecular weight
- (e) vanadium compound
- (f) zirconium compound

(2) Aluminum alloy thermal exchanger according to claim (1) characterized in that the water soluble vanadium compound (a) is one or more than one of organic vanadium complex compounds being selected from the group of vanadium acetyl acetonate and vanadyl acetyl acetonate.

(3) Aluminum alloy thermal exchanger according to claim (1) characterized in that the weight of the first protective film is 10~2000 mg/m², the vanadium in the first protective film is 2~500

mg/m² and the zirconium in the first protective film is 2~500 mg/m².

(4) Aluminum alloy thermal exchanger according to claim (1) characterized in that the weight of the second protective film is 30~5000 mg/m², the vanadium in the second protective film is 2~500 mg/m² and the zirconium in the second protective film is 1~1750 mg/m².